

WHAT IS CLAIMED IS:

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1. A liquid crystal display device comprising:  
a display part divided into blocks;  
a gate driver which sequentially drives  
10 scan lines arranged in the display part one by one;  
and  
a data driver which supplies, via common  
signal lines, display signals to pixels connected to  
one of the scan lines driven by the gate driver and  
15 located in one of the blocks which are sequentially  
selected in accordance with a block control signal.

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2. The liquid crystal display device as  
claimed in claim 1, further comprising a block  
control signal generating part which generates the  
block control signal.

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3. The liquid crystal display device as  
30 claimed in claim 1, further comprising an electronic  
circuit which is provided to a panel substrate on  
which the display part is formed and which generates  
the block control signal.

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4. The liquid crystal display device as  
claimed in claim 1, further comprising an electronic  
circuit which is provided outside a panel substrate  
on which the display part is formed and which  
5 generates the block control signal.

10 5. The liquid crystal display device as  
claimed in claim 1, further comprising analog  
switches located in the blocks and provided between  
the common signal lines and the pixels, the analog  
switches located in said one of the blocks selected  
15 by the block control signal being simultaneously  
activated.

20 6. The liquid crystal display device as  
claimed in claim 5, wherein:

25 each of the analog switches comprises a  
pair of an n-channel field effect transistor and a  
p-channel field effect transistor and is connected  
to a corresponding one of the common signal lines  
via which the block control signal having different  
polarities are supplied; and

30 the display signals are applied to the  
pixels from the common signal lines via one of each  
of pairs of analog switches selected by block  
control signals separately supplied.

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7. The liquid crystal display device as

claimed in claim 5, wherein:

5        said analog switches are formed by either n-channel or p-channel TFTs, connected to one of the common signal lines, and controlled by the block control signals; and

the display signals are applied to the pixels from the common signal lines via one of the analog switches selected by a corresponding one of the block control signals.

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15        8. The liquid crystal display device as claimed in claim 1, wherein said data driver comprises a display signal generating part which generates the display signals from a digital signal applied thereto and applies the display signals to said one of the blocks selected in accordance with 20        the block control signal.

25        9. The liquid crystal display device as claimed in claim 1, wherein said display signal generating part comprises at least one driver IC mounted by a TAB, TCP or COG, output terminals of the at least one driver IC being connected to the 30        common signal lines.

35        10. The liquid crystal display device as claimed in claim 9, wherein the output terminals of the at least one driver IC are connected to output

terminals an IC chip, output terminals of the gate driver, output terminals of the data driver and control terminals of the analog switches.

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11. The liquid crystal display device as  
claimed in claim 1, wherein a number of the common  
10 signal lines is larger than a number of blocks.

15 12. The liquid crystal display device as  
claimed in claim 1, wherein a block control period  
during which one of the blocks is activated is  
longer than a time constant of signal lines which  
are provided in the display part and coupled to the  
20 common signal lines.

25 13. The liquid crystal display device as  
claimed in claim 1, wherein a blanking period during  
which the clock control signals are not supplied to  
any of the blocks is longer than a block control  
period during which one of the blocks is activated  
30 or a sum of a rising time and a falling time of a  
gate scan signal which sequentially drives the scan  
lines.

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14. The liquid crystal display device as

claimed in claim 1, wherein at least one of the gate driver and the data driver includes a plurality of chips.

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15. The liquid crystal display device as claimed in claim 5, wherein the analog switches in  
10 one of the blocks are simultaneously turned on in response to the block control signal.

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16. The liquid crystal display device as claimed in claim 1, wherein the display part comprises a number of pixels which is an integer multiple of a number of bits of one block.

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17. The liquid crystal display device as  
25 claimed in claim 16, wherein each of the blocks comprises a number of bits equal to an integer multiple of any of 200, 240, 256, 300 and 384.

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18. The liquid crystal display device as claimed in claim 1, wherein the display part and the gate driver and the analog switches are formed on an  
35 identical substrate and the data driver is formed by an TAB-IC provided outside the substrate.

19. The liquid crystal display device as  
claimed in claim 1, wherein segmented areas are  
defined so as to correspond to the blocks, each of  
the segmented areas having a respective width of the  
5 block control lines.

10 20. The liquid crystal display device as  
claimed in claim 19, wherein an expression described  
below is satisfied:

$$w = (W_0 - (n - 1)S)/n$$

15 where  $W_0$  denotes a width of each of the  
segmented areas,  $w$  denotes a width of the block  
control lines,  $n$  denotes a number of block control  
lines, and  $S$  denotes an interval between adjacent  
ones of the block control lines.

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21. The liquid crystal display device as  
claimed in claim 19, wherein the width of the block  
25 control lines in each of the segmented areas is  
selected so that the block control lines in each of  
the segmented areas have an approximately constant  
resistance value measured from start points of the  
block control lines to end points thereof.

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22. The liquid crystal display device as  
35 claimed in claim 19, wherein the block control lines  
have a multi-layer structure having an upper block  
control line and a lower block control line, the

upper and lower block control lines being electrically connected via a through hole formed in an insulating layer sandwiched between the upper and lower control lines.

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23. The liquid crystal display device as  
10 claimed in claim 19, further comprising a signal line connecting the switch elements arranged in an identical one of the blocks, a corresponding one of the block control lines being connected to a central portion of the signal line connecting the switch  
15 elements.

20 24. The liquid crystal display device as claimed in claim 1, wherein each of the blocks having a respective resistivity of the block control lines so that differences between resistance values of the block control lines measured from start  
25 points of the block control lines to end points thereof can be reduced.

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25. The liquid crystal display device as claimed in claim 24, wherein each of the blocks has a respective layer structure dependent on the corresponding resistivity.

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26. A liquid crystal display device comprising:

a display part having pixels arranged in a matrix formation;

5 signal lines and scan lines connected to the pixels;

a data driver which supplies display signals to the signal lines; and

10 potentials of the signal lines to a predetermined potential with a given period.

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27. The liquid crystal display device as claimed in claim 26, wherein the reset circuit is connected to the signal lines.

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28. The liquid crystal display device as claimed in claim 26, wherein the reset circuit is 25 connected to an output part of the data driver.

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29. The liquid crystal display device as claimed in claim 26, wherein the reset circuit comprises a first reset circuit connected to the signal lines, and a second reset circuit connected to an output part of the driver.

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30. The liquid crystal display device as  
claimed in claim 26, wherein the reset circuit  
receives a reset signal externally applied thereto  
during a blanking period included in a horizontal  
5 period and resets the potentials of the signal lines  
to the predetermined potential during the blanking  
period.

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31. The liquid crystal display device as  
claimed in claim 26, wherein a polarity of the  
predetermined potential is inverted in synchronism  
15 with the polarity of the display signals.

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32. A liquid crystal display device  
comprising:

a display part having pixels arranged in a  
matrix formation;

25 signal lines and scan lines connected to  
the pixels;

analog switches respectively connected to  
the signal lines;

30 a data driver which is connected to the  
analog switches via common signal lines and supplies  
display signals to the signal lines via the analog  
switches; and

35 a reset circuit which resets the  
potentials of the signal lines and/or the common  
signal lines to a predetermined potential with a  
given period.

33. The liquid crystal display device as claimed in claim 32, wherein the reset circuit is connected to the signal lines.

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34. The liquid crystal display device as claimed in claim 32, wherein the reset circuit is  
10 connected to an output part of the driver.

15 35. The liquid crystal display device as claimed in claim 32, wherein the reset circuit comprises a first reset circuit connected to the signal lines, and a second reset circuit connected to an output part of the driver.

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25 36. The liquid crystal display device as claimed in claim 32, wherein the reset circuit is connected to the common signal lines.

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37. The liquid crystal display device as claimed in claim 32, wherein the reset circuit comprises a first reset circuit connected to the signal lines, and a second reset circuit connected to either an output part of the driver or the common signal lines.

38. The liquid crystal display device as  
claimed in claim 32, wherein the reset circuit  
receives a reset signal externally applied thereto  
during a blanking period included in a horizontal  
5 period and resets the potentials of the signal lines  
to the predetermined potential during the blanking  
period.

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39. The liquid crystal display device as  
claimed in claim 32, wherein a polarity of the  
predetermined potential is inverted in synchronism  
15 with the polarity of the display signals.

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40. A liquid crystal display device  
comprising:

a display part which has pixels arranged  
in a matrix formation and is divided into blocks;  
signal lines and scan lines connected to  
25 the pixels;  
analog switches respectively connected to  
the signal lines and provided in the blocks;  
a data driver which is connected to the  
analog switches via common signal lines and supplies  
30 display signals to the signal lines via the analog  
switches provided in one of the blocks which are  
sequentially selected in accordance with a block  
control signal; and  
a reset circuit which resets the  
35 potentials of the signal lines to a predetermined  
potential with a given period.

41. The liquid crystal display device as  
claimed in claim 40, wherein the reset circuit  
receives a reset signal externally applied thereto  
during a blanking period included in a horizontal  
5 scan period and resets the potentials of the signal  
lines to the predetermined potential during the  
blanking period.

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42. A data driver comprising:  
an internal IC circuit which generates  
display signals formed on a substrate;  
15 operational amplifiers connected to the  
internal IC circuit; and  
a reset circuit which resets a potential  
of an output part to a predetermined potential, the  
display signals being output via the output part of  
20 the reset circuit.